Remarks:

These remarks are responsive to the Office action dated June 30, 2008. Prior to entry of this response, claims 1, 2, 4-7, and 17-19 were pending in the application. By way of this response, claims 1 and 17 are amended. Applicants respectfully request reconsideration of the application and allowance of the pending claims.

Rejections under 35 U.S.C. § 103

Claims 1, 4-7, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,226,982 (Poggio et al.) in view of U.S. Patent No. 5,970,707 (Sawada et al.). Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,226,982 (Poggio et al.) in view of U.S. Patent No. 5,970,707 (Sawada et al.) as applied to claim 1 above and further in view of U.S. Patent No. 6,619,032 (Kakuyama et al.).

Claim 1 has been amended to recite: "A method for controlling an engine … comprising … after said lean operation, operating the engine to produce a rich exhaust gas mixture fed to the emission control device, said rich exhaust gas mixture having a rich air-fuel ratio … where the rich air-fuel ratio decreases with decreasing oxygen storage capacity at a slope that is steeper at higher temperatures than lower temperatures."

The current invention describes the selection of target air-fuel ratio as a function of temperature and oxygen storage capacity as a set of temperature curves, as shown, for example, in Fig. 11 of the specification (where CO is a reactant proportionally related to air-fuel ratio such that increasing CO indicates a richer air-fuel ratio). This set of temperature curves is determined experimentally and stored in tables where from the target air-fuel ratio may be selected based on at least oxygen storage capacity and temperature of the device, accounting for changes in oxygen storage capacity that are independent of temperature (e.g., changes due to catalytic converter age) and changes in temperature, as described at page 14, lines 8-19:

> As an example, in Figure 11 a level of 0.6 mg/in3 was specified. Figure 11 shows the CO required to achieve a NO_X

release of 0.6 mg/in3 at both 425°C and 500 C. For a given level of OSC, much more CO is required at 500°C than at 425°C to achieve the 0.6 mg/in3 of NO_X release.

Thus, this data can be used to generate tables, in one example, to be used during engine control to select (during real-time operation) a level of reductant (or a level of a rich air-fuel ratio) to be provided during a NOx purge. Further, the rich level can be varied during the rich purge to provide a desired profile suited to expected NOx release.

From experimental results, said tables will show rich air-fuel ratio decreases with decreasing oxygen capacity to a greater extent – that is, at a steeper slope - at high temperatures than at low temperatures, which is illustrated as the difference in the slope of the lines in Fig. 11, for example.

This configuration has the potential benefit of eliminating an oxygen storage capacity sensor and reducing processing time for selection of the target air-fuel ratio based on oxygen storage capacity and temperature.

In contrast, the prior art (Poggio et al.) does not disclose or suggest such a configuration. Upon careful study of the reference Applicants submit that the reference merely describes an algorithm for determining desired air-fuel ratio based on the relation between oxygen storage capacity and temperature, and includes an adaptability function to measure maximum oxygen storage capacity from temperature of the catalytic converter at the time it is needed and does not disclose the relationship between target air-fuel relationship and oxygen storage capacity as both temperature and oxygen storage capacity change. Further, the relationship between slopes of temperature curves of air-fuel ratio to oxygen storage capacity is not described.

Poggio et al. acknowledges that maximum oxygen capacity decreases moreso at high temperatures than at low temperatures but does not describe how the rich air-fuel ratio decreases with decreasing oxygen capacity to a greater extent at high temperatures than at low temperatures (i.e., the difference in slope of temperature curves). Thus, the temperature curves as in Fig. 11 of the current disclosure cannot be derived from the prior art's algorithm because the relation between desired air-fuel ratio and changing oxygen

storage capacity at any given temperature is not described and, further, is not described for several temperatures. Lacking these features, the prior art fails to achieve the potential benefits discussed of the above claimed configuration.

In view of the above explanatory remarks, Applicants respectfully submit that claims 1, 2, and 4-7, are supported by the current specification. Further the combination of Poggio et al. in view of Sawada et al. does not disclose or suggest each and every element of Applicants' amended claim 1. Thus, the rejection of claim 1, as well as dependent claims 4-7 under 35 U.S.C. 103 should be withdrawn. Further, the combination of Poggio et al., Sawada et al., and Kakuyama et al. does not disclose or suggest the features of claim 2, which depends from claim 1, and therefore the rejection of this claim under 103 should also be withdrawn.

Claim 17 has been amended to recite: "A method for controlling an engine ... the method comprising ...after said lean operation, operating the engine to produce a rich exhaust gas mixture fed to the emission control device, said rich exhaust gas mixture having a rich air-fuel ratio ... where as the oxygen storage capacity decreases the rich air-fuel ratio is selected to be less rich by a steeper slope at higher temperatures of the emission control device than at lower temperatures of the emission control device."

For the reasons discussed above in regard to amended claim 1, Applicants submit that Poggio et al. does not disclose or suggest such a configuration of selecting an air-fuel ratio to be less rich by a steeper slope at higher temperatures of the emission control device as oxygen storage capacity decreases, compared to selecting an air-fuel ratio to be less rich at a relatively less steep slope at lower temperatures of the emission control device as oxygen storage capacity decreases.

In view of the above explanatory remarks, Applicants respectfully submit that amended claim 17, and dependent claims 18-19 are supported by the current specification and that Poggio et al, in view of Sawada et al. does not disclose or suggest each and every element of Applicants' amended claim 17. Thus, rejection of claim 17, as well as dependent claims 18-19, under 35 U.S.C. 103 should be withdrawn.

Conclusion

Applicant believes that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, Applicant respectfully request that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Please charge any cost incurred in the filing of this Response, along with any other costs, to Deposit Account No. 061510.

Respectfully submitted,

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